

Amendments to the Claims

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

Claims 1-8 (Cancelled)

9. (Previously presented) A method of inhibiting microbial growth in a well comprising:

providing a well bore, the well bore having a depth extending from a ground surface only partially through the vadose-zone;

providing at least one access tube within the well bore, the at least one access tube being disposed externally to a well casing; and

supplying an antimicrobial material into the well through the first terminal opening of the at least one access tube.

10. (Original) The method of claim 9 wherein the providing the at least one access tube comprises providing from about 2 to about 10 access tubes.

11. (Previously presented) The method of claim 9 wherein the casing is at least partially surrounded by an annular space, and wherein the at least one access tube is provided within the annular space.

12. (Original) The method of claim 11 wherein the providing the at least one access tube comprises distributing from about 2 to about 10 access tubes around a circumference of the casing.

13. (Original) The method of claim 12 wherein the distributing the access tubes comprises equally spacing the access tubes around the casing.

14. (Original) The method of claim 9 wherein the providing the at least one access tube comprises providing access tubes having a perforated segment extending from a second terminal opening, the second terminal opening being within the well bore, and wherein the second terminal opening is capped.

15. (Original) The method of claim 9 wherein the supplying the antimicrobial agent comprises supplying the antimicrobial agent at time intervals.

16. (Original) The method of claim 15 wherein the time intervals are from between about 2 months and about 12 months.

17. (Original) The method of claim 15 further comprising:
reversibly capping the first terminal opening of the at least one access tube during the time interval between the supplying of the antimicrobial agent.

18. (Original) The method of claim 9 wherein the supplying the antimicrobial agent comprises supplying one or more of a chlorine release compound, an antimicrobial amine, or a metal inhibitor.

19. (Original) The method of claim 18 wherein the supplying the antimicrobial agent comprises supplying a chlorine release compound wherein chlorine is released when the compound reacts with water.

20. (Original) The method of claim 9 wherein the supplying the antimicrobial agent comprises supplying one or more of a powder form, a tablet form, a granular form, or a pellet form.

21. (Original) The method of claim 9 wherein the supplying the antimicrobial agent comprises supplying at least some of the antimicrobial agent in an encapsulated form.

22. (Original) The method of claim 9 wherein the supplying the antimicrobial agent through the first terminal opening comprises pressure pumping one or both of a gas antimicrobial agent and a liquid antimicrobial agent through the first terminal opening.

23. (Original) The method of claim 9 wherein the supplying the antimicrobial agent through the first terminal opening comprises pushing one or both of a gas antimicrobial agent and a liquid antimicrobial agent through the first terminal opening with a pressurized air stream.

24. (Previously presented) A method of inhibiting microbial growth in a well comprising:

providing a well bore having a depth extending from the ground into the saturated-zone;

providing a casing within the well bore, the casing being at least partially surrounded by an annular space;

providing at least one access tube within the well bore and external to the casing; and

supplying an antimicrobial agent into the well through the at least one access tube, the antimicrobial agent comprising at least one of a powder form and a granular form.

25. (Cancelled).

26. (Original) The method of claim 9 further comprising:

providing a layer of packing material to an elevation within the well bore to at least partially fill the well bore, wherein the at least one access tube extends to below the elevation of the layer.

27. (Original) The method of claim 26 wherein the providing the at least one access tube comprises providing access tubes having a perforated segment, and wherein the elevation of the layer of packing material is above the perforated segment of the access tubes.

28. (Original) The method of claim 26 further comprising:

formation of the packing material, the formation comprising mixing an antimicrobial agent with one or both of sand and gravel.

Claims 29- 40 (Cancelled).

41. (Previously presented) A well comprising:

a well bore; and

a layer of packing material within the well bore, wherein the layer of packing material comprises a mixture of an antimicrobial agent and gravel, the mixture having an antimicrobial agent content of from about 0.5% to about 30%, by volume.

42. (Original) The well of claim 41 further comprising;

a casing within the well bore, wherein the casing comprises a screened portion;

an annular space around at least part of the casing, wherein the layer of packing material within the bore is within the annular space and at least partially covers the screened portion of the casing.

43. (Original) The well of claim 42 wherein the layer of packing material entirely covers the screened portion of the casing.

44. (Previously presented) A well comprising:

a an uncased well bore;

one or more access tubes within the uncased well bore; and

an antimicrobial agent within the uncased well bore, the antimicrobial agent being added through the access tubes.

45. (Cancelled).

46. (Original) The well of claim 44 wherein the antimicrobial agent comprises one or both of a liquid and a gas.

47. (Original) The well of claim 44 wherein the antimicrobial agent comprises one or more of a powder form, a tablet form, a granular form and a pellet form.

48. (Original) The well of claim 44 wherein the one or more access tubes have a diameter of from about 0.25 inches to about 1.5 inches.

49. (Cancelled)

50. (Previously presented) The well of claim 44 wherein the antimicrobial agent comprises a first antimicrobial agent and wherein the well construction further comprises a layer of packing material within the well bore, the layer of packing material comprising a second antimicrobial agent.

51. (Original) The well of claim 50 wherein the second antimicrobial agent is different from the first antimicrobial agent.

52. (Original) The well of claim 44 wherein the well bore extends into the saturated-zone.

53. (Previously presented) The well of claim 44 wherein the well bore extends partially through the vadose-zone.

54. (Previously presented) A well having inhibited microbial growth comprising:
a well bore;
a well casing within the well bore, the casing having a terminal end within the well bore and having a screened portion extending from the terminal end to a first elevation within the bore;
multiple access tubes, the access tubes being within the well bore and externally encircling the casing, the access tubes having a first terminal opening and a second terminal opening, the second terminal opening being within the well bore, and having a perforated segment extending from the second terminal opening to a second elevation within the well bore;
a layer of packing material within the well bore, wherein the packing layer comprises a mixture of a first antimicrobial agent and one or more of sand and gravel and fills the bore to a third elevation within the bore and wherein the mixture was mixed prior to formation of the layer; and
a second antimicrobial agent within the access tubes, the second agent being able to pass from within the access tubes into the layer of packing material through the perforated segment of the access tubes.

55. (Original) The well of claim 54 wherein the third elevation is greater than the first and the second elevation.

56. (Original) The well of claim 54 wherein the second antimicrobial is added through the first terminal opening, and wherein the second antimicrobial comprises one or both of a gas and a liquid.

57. (Original) The well of claim 56 wherein the one or both of a gas and a liquid are pumped through the first terminal opening of the access tubes.

58. (Original) The well of claim 56 wherein the one or both of a gas and a liquid are pushed through the access tubes and into the layer of packing material by a pressurized air stream flowed through the first terminal opening of the access tubes.

59. (Previously presented) The well of claim 56 wherein the one or both of a gas and a liquid are pushed through the access tubes and into the layer of packing material by sifting the antimicrobial agent through the perforated segment of the access tubes.

60. (Previously presented) The method of claim 24 wherein the antimicrobial agent comprises an antimicrobial amine.

61. (Previously presented) The method of claim 24 wherein the antimicrobial agent is a first antimicrobial agent, and further comprising providing a second antimicrobial agent within the well, the second antimicrobial agent differing from the first antimicrobial agent.

62. (Previously presented) The method of claim 61 wherein the providing the second antimicrobial agent comprises supplying the second antimicrobial agent through the at least one access tube.

63. (Previously presented) The method of claim 61 wherein the providing the second antimicrobial agent comprises mixing the second microbial agent with a packing material to form a mixture and filling at least a portion of the annular space with the mixture.

64. (Previously presented) The method of claim 61 wherein the second antimicrobial agent is selected from the group consisting of a chlorine release compound, an antimicrobial amine and a metal inhibitor.

65. (Previously presented) The method of claim 61 wherein the second antimicrobial agent comprises a gas.

66. (Previously presented) The method of claim 61 wherein the second antimicrobial agent comprises a liquid.

67. (Previously presented) The method of claim 24 wherein the first antimicrobial agent is encapsulated.